



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Assistant COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

BS

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,159	11/27/2001	Allen Dennis Roche	201-0986DP	5969
28395	7590	01/25/2004		
BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			EXAMINER	
			LIN. ING HOUR	
			ART UNIT	PAPER NUMBER
			1725	
DATE MAILED: 01/23/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.	ROCHE ET AL.
Examiner	Art Unit
Int'l-Hour Lin	1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extension of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed if the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If the period for reply specified above is less than thirty (30) days, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any extended patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) Responsive to communication(s) filed on 27 November 2001.  
2a) This action is FINAL.                    2b) This action is non-final.  
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) Claim(s) 1-11 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) Claim(s) \_\_\_\_\_ is/are allowed.  
6) Claim(s) 1-11 is/are rejected.  
7) Claim(s) \_\_\_\_\_ is/are objected to.  
8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) The specification is objected to by the Examiner.  
10) The drawing(s) filed on 27 January 2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.  
13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) The translation of the foreign language provisional application has been received.  
14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0105  
4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.  
5) Notice of Informal Patent Application (PTO-152)  
6) Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. Claims 3-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 3-10, "martinsite" is unclear. Is it a typo of --martensite--?

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat. No. 5,947,179.

US Pat. No. '179 (col. 5, lines 55+) teaches the claimed method for controlling the manufacture of a spray formed metallic tool (deposit 39), comprising: applying a metallic spray-forming particles at a preselected application temperature estimated in the range of 700-850 °C during application of the spray-forming particles at impact upon the mold substrate at a staged heating time period and temperature cycle up to about 700 °C and controlled to the targeted isothermal temperature (250-500 °C) at least above the martensitic start temperature for a time period of 30 seconds to several hours, wherein the substrate is disposed within a spray chamber for the purpose of controlling diffusion based reaction, homogeneous volume changes and stress control in the microstructure of the steel having metallic phases including bainite phase causing a predetermined volumetric expansion in the spray formed metallic article, and controlling other

elements in spray forming parameters including voltage setting in a spray gun and a distance between the spray gun and the substrate (col. 4, lines 48+).

*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 4-5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat. No. 5,947,179 in view of Jordan et al.

US Pat. No. '179 (col. 5, lines 55+) teaches the use of rapid cooling in T-T-T Diagram (see Fig. 3) for producing a complete bainite transformation (col. 5, lines 49+) but fails to teach the step for producing a mixed-phase including martensitic transformation in the spray-forming metallic tool.

However, Jordan et al (col. 8, lines 42+) teach the use of rapid cooling and heating and controlling the substrate to a temperature lower than the martensite start temperature of the spray forming material for the purpose of effectively controlling the equilibrium deposit temperature of 257 °C (col. 8, lines 34+) such that the deposit article having a substantial proportion of martensite and /or bainite and /or pearlite in order to control the volumetric change and stress in the product. It would have been obvious to one having ordinary skill in the art to provide '179 a rapid cooling to a temperature lower than the martensite start temperature of the spray forming as taught by Jordan et al in order to produce a mixed-phase including martensitic transformation before bainite transformation is complete at an isothermal temperature and effectively control the quality of manufacturing a spray-formed tool.

7. Claims 1-3 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan et al in view of US Pat. No. '179.

Jordan et al (col. 8, lines 42+) teach the claimed method for controlling the manufacture of a spray formed metallic tool (deposit 39), comprising: rapid cooling and controlling the substrate to a temperature lower than the martensite start temperature of the spray forming material for the purpose of effectively controlling the equilibrium deposit temperature of 257 °C (col. 8, lines 34+) such that the deposit article having a substantial proportion of martensite and /or bainite and /or pearlite in order to control the volumetric change and reduce the internal stress in the product.

Jordan et al fail to teach the step of controlling temperature and time in a phase transformation using a T-T-T Diagram (see Fig. 7) to produce a mixed-phase including bainite.

However, US Pat. No. '179 (col. 5, lines 55+) teaches the use of a T-T-T Diagram (see Fig. 3), for producing a bainite transformation (col. 5, lines 49+) by heating and controlling the substrate at an isothermal temperature (250-500 °C) at least above the martensitic start temperature for a time period of 30 seconds to several hours during spray-forming the metallic tool. It would have been obvious to one having ordinary skill in the art to provide Jordan et al reheating the substrate to a temperature higher than the martensite start temperature of the spray forming material as taught US Pat. No. '179 in order to effectively control the mixed-phase makeup after a partial rapid cooling and control the quality of the spray-formed tool.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

*J-HL*

I-H.L.  
01-05-04

Kiley Stover AU 1725  
*Kiley Stover* 1/12/04